

ABSTRACT

A method is provided for selective binding and detecting target molecules, and a method for detecting biological molecules, the method comprising supplying a semi-conductor capable of charge pair separation, and juxtaposing affinity moieties to the semi-conductor so as to effect changes in the charge pair separation characteristics when the affinity molecules are bound to the target molecules. Also provided is a construct to facilitate *in vivo* and *in situ* manipulation of biological material such as DNA, RNA, organelles, and protein. A method also is provided to facilitate *in vivo* and *in situ* manipulation of biological material.